



# VANTAGE VIRTUAL DOMAIN MANAGEMENT GUIDE

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Electromagnetic Immunity: EN 55035

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# Configuring a Vantage Virtual Domain

This guide describes how to configure Vantage-specific settings when you are implementing a virtual Vantage domain. All other aspects of Vantage configuration and administration are described in the [Vantage Domain Management Guide](#).

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**Note:** Features for which you don't have a license are disabled and indicate that you need a license to use them.

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## Topics

- [Virtual Domain Overview](#)
- [Installation and Configuration](#)
- [Managing the Virtual Node Life Cycle](#)
- [Recommendations and Troubleshooting](#)
- [Deploying a Virtual Domain in a Windows Workgroup](#)

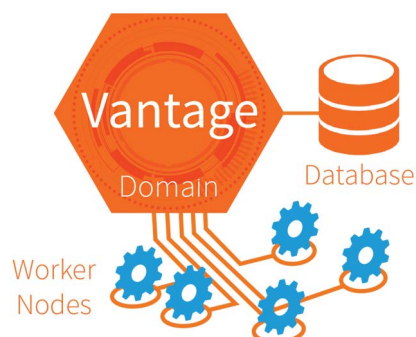
## Virtual Domain Overview

A *virtual* Vantage domain is a Vantage domain which has been implemented in a private or public cloud environment. A Vantage virtual domain capitalizes on the deployment flexibility offered by Infrastructure as a Service (IaaS), in cloud-based environments such as Amazon AWS. This flexibility enables you to deploy Vantage domains in the cloud where they are available when you need them without investing in additional, on-prem servers.

Virtual nodes can reside in any of these environments:

- Private data centers using managed virtualization
- Public cloud IaaS—Amazon AWS, Rackspace, Google GCE, Microsoft Azure, etc.

- On-premises/laaS hybrid cloud model if adequate, dedicated connection is available



The only fee that Telestream charges you is for Vantage licenses for servers (cloud or local) that you are actually using. Licenses can be permanent or rented in increments as small as 30 days. (Additional charges from your cloud provider may apply to both active and idle nodes for the amount of processing you use). For Vantage Array users who prefer not to incur costs for local hardware infrastructure or whose workload varies, a virtual domain offers ideal flexibility. You license and deploy a Vantage Array containing the number of *worker nodes* you need on an average basis, either on-prem or in the cloud. Later, if you need more capacity, you deploy additional virtual nodes in the cloud and license them for as few as 30 days.

When one Vantage virtual domain installation is complete, you can duplicate it to spin up new Vantage virtual instances. When you no longer need the additional virtual nodes, you can un-license them and shut them down. (Note that ongoing cloud provider charges may apply if the instances are left running, even if unlicensed.)

The infrastructure platform that you use is up to you as long as you can provide Windows Server-based instances that meet Vantage performance, networking, and storage requirements.

Example deployments include on-premises virtualization with VMWare and COTS blade servers, Amazon AWS EC2 computing instances, and Microsoft Azure.



When you are ready to implement your Vantage virtual domain, contact [Telestream Support](#) to discuss your plans, and implement a properly working Vantage domain.

## Installation and Configuration

Install and configure a Vantage array according to the installation procedures in the [Vantage Domain Management Guide](#). These topics explain the additional requirements for a Vantage virtual domain, including machine instances, software, connectivity, and accounts you will need to implement a Vantage virtual domain in either a virtualization environment or an IaaS cloud platform.

- [Virtual Domain System Requirements](#)
- [Installing and Configuring Vantage Services](#)

## Vantage Media Processing Server Requirements

Supported Windows operating systems: [ednote update list](#)

- Windows Server 2012 R2
- Windows Server 2016 (with Desktop Experience) Standard or Data Center

Requirements for servers that host Vantage services:

- CPU—Minimum 16 Intel-based virtual CPU cores, 2.0 GHz. Recommend 24+ cores. Because of CPU-intensive Vantage processing, Telestream recommends that CPU resources be dedicated (reserved) in the infrastructure platform.
- RAM—16 GB minimum. Recommend 32 GB or greater. Vantage consistently uses many GB of RAM when processing media. Telestream recommends that some or all memory resources be dedicated (reserved) in the infrastructure system.
- OS Volume—6 GB of space should be available for Vantage service installation.
- Networking—All Vantage servers should have 1 Gb+ low-latency management connectivity and access to the Vantage MS SQL database instance. Networking infrastructure must allow for high-speed access to shared storage (see below).
- DNS—Each instance must be addressable via a forward-lookup DNS record matching the Windows host name. Virtual instances must be reachable via this DNS record within 60 seconds of instantiation.
- Active Directory—All Vantage instances should be members of the Microsoft Active Directory. An Active Directory account should be used for Vantage service logons and MS SQL authentication. This provides the Vantage services permission to access file locations shared with the Windows user. An Active Directory account is also a prerequisite for a virtual domain so that Vantage services on virtual nodes can use SSPI (Security Support Provider Interface) for implicit authorization in SQL Server and the Vantage Domain Database. If Active Directory is not available, see [Deploying a Virtual Domain in a Windows Workgroup](#) for alternative methods.
- Networking Security—Vantage instances must be able to communicate with each other over a variety of TCP ports. See the [Vantage Domain Management Guide](#) for port lists.

- NTP—All Vantage instances should have accurate system clocks established by using an NTP server.
- Remote Access—All instances should be accessible either via Microsoft Remote Desktop or a virtual console for support purposes.
- Shared Media Storage—Multi-node Vantage systems depend on shared media storage locations for media file input, output, and intermediate storage. This storage must be accessible from all Vantage machine instances via either UNC paths or drive letters provided by SAN client software for block-level media SANs. Vantage processing performance depends on the throughput and latency of this storage.
- (Optional) GP—A Virtual Lightspeed License (delivered either in the base perpetual license or in a rental license), allows Vantage media processing instances to utilize GPUs presented to the instance via GPU pass-through (also known as 1-to-1 mapping and direct device assignment). The GPU model must be qualified by Telestream, and the hypervisor or cloud platform must perform a native pass-through allowing for native GPU driver installation. Contact Telestream or visit [telestream.net](https://telestream.net) for information on qualified GPU models.

## Vantage Domain Database Server Instance

Vantage Domains require a Microsoft SQL database. Please consult the [Planning and Setting Up Your Vantage Database app note](#) to determine which edition of SQL Server to use.

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**Note:** SQL Server Standard is recommended for virtual domains expected to have 5 or more Vantage nodes running at a time. The app note also explains how to install SQL Server Standard for use by Vantage.

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The requirements and deployment of the database are described in the [Vantage Domain Management Guide](#). You can deploy the Vantage database on machine instances meeting the performance requirements described in the guide. Follow the guide to deploy the Vantage database structure into the MS SQL instance.

For Vantage virtual domains to allow virtual services to use SSPI to connect to the database with implicit authentication, the Windows domain user for Vantage services logon must be provided the *sysadmin* server role with SQL Server. (By default, the user specified as the SQL Server Administrator during the installation of SQL Server is given the *sysadmin* role.)

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**Note:** For Amazon AWS deployments, you can deploy the Vantage database into an RDS instance if desired. Contact Telestream for more information.

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## Vantage Web Apps Server Instance

Vantage domains utilizing one or more web applications require a web server.

- You can deploy the web server as a machine instance with CPU and RAM allocations of a typical web server. The server must meet the other requirements listed above for Vantage media processing machine instances.

See the [Vantage Domain Management Guide](#) for more information on deploying and configuring a Vantage web apps web server.

## Configuring Vantage Client Instance(s)

Vantage administration is performed in two client programs: Vantage Workflow Designer and the Vantage Management Console. You can run programs on any instance in the domain.

- Telestream recommends that you provision an administration client instance to run Vantage Workflow Designer and the Vantage Management Console, and to perform other management tasks.

### Supported Windows Client Operating Systems:

- Windows Server 2012 R2
- Windows Server 2016
- Windows 7
- Windows 8.1
- Windows 10

### Client Network Security

The configuration instance must be able to communicate with Vantage media processing instances over a variety of TCP ports and SQL database ports listed in the [Vantage Domain Management Guide](#).

## Users, Shared Storage, and ComponentPacs

Vantage requires shared storage and a central location for ComponentPacs, accessible to all Vantage nodes. Follow the guidance here and refer to the [Vantage Domain Management Guide](#) for details.

- For Vantage services to properly authenticate to a UNC location, either use the Settings & Options > Authorization tab in the Management Console to provide the user credentials, or change the logon of the Vantage services.
- Vantage services must have permission to read from the shared location where the ComponentPacs reside.
- Copy your ComponentPacs from the default directory (*C:\Program Files (x86)\Telestream\Vantage\ComponentPacs*) to your shared storage location.
- In the Vantage Management Console ComponentPac Management panel, enter or browse to your central ComponentPac storage location, and press Enter.

## Licensing Your Vantage Domain

Licensing your domain requires the following software and license:

- Vantage 8.3 or later installer.
- A Vantage virtual domain license file (permanent or rental) which includes:
  - The features licensed in the domain
  - The licensed node count for each feature

Once a Vantage domain agreement has been completed, Telestream will deliver you a license specifying licensed features, quantities, and functionality available to Vantage nodes, including virtual nodes.

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**Note:** If you plan to use a GPU with your nodes, you should also purchase the Vantage Virtual Lightspeed License option to include in your domain license.

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## Configuring Your System for Security

Telestream recommends these secure network configuration practices:

- Establish a secure Vantage server within your enterprise security system.
- Only access your Vantage virtual domain directly from your secure server.
- Use a VPN connection to the on-premises server, and use RDP from the server to the Vantage virtual domain.
- Do NOT configure two servers for access to the same Vantage virtual domain.



## Installing and Configuring Vantage Services

Follow these instructions to install Vantage on local and virtual nodes.

There are two primary types of nodes that may be configured:

- Local nodes—Local nodes are installed on your local on premises servers, including Lightspeed servers or other Windows servers meeting Vantage specifications.
- Virtual nodes—Virtual nodes are installed on virtual machines or bare metal rented servers in a public or private cloud environment meeting specifications.

The process of installing Vantage services onto an instance is similar for both virtual and local nodes, but virtual nodes may include additional installation requirements established by the cloud provider. Refer to the cloud provider's installation instructions.

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**Note:** The deployment, management, and support of instances meeting the requirements listed in [Virtual Domain System Requirements](#) is the customer's responsibility. The steps involved vary depending on the environment and selected infrastructure provider. This document does not attempt to detail this process.

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### Installing and Configuring Vantage on Virtual Nodes

Follow the installation instructions in the [Vantage Domain Management Guide](#) plus the additional instructions here to install Vantage on virtual nodes.

- Use the Vantage installer to install Vantage in the cloud. Browse to your cloud server when the installer asks where to install.
- In the installer, you can install a Vantage array or a single server Vantage domain. Select specific services to install as part of a virtual or local domain, or you can install a complete Vantage domain.
- If using cloud storage for media or other Vantage-related storage, refer to the [Using Cloud Storage with Vantage](#) app note.

### Change the Vantage Service Logon and Startup

Change the logon of the Vantage services on the virtual node to the Active Directory user that was given the sysadmin SQL server role. This enables Vantage services to use implicit authentication with SSPI database connectivity to automatically join the domain on startup.

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**Note:** The Active Directory user must be a local administrator on the worker node so that Vantage services have permission to update log files.

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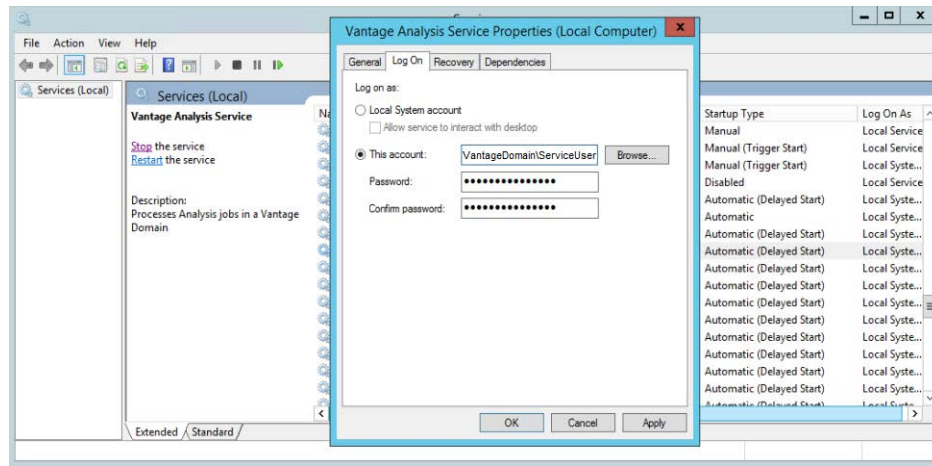
In these examples, Windows panels are shown, but you can also use a BAT file.

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**Note:** If you use a BAT file, first use the Windows services console to manually change the logon of at least one Windows service. After this is done once, the local group policy is updated to allow services to log on as a specified user.

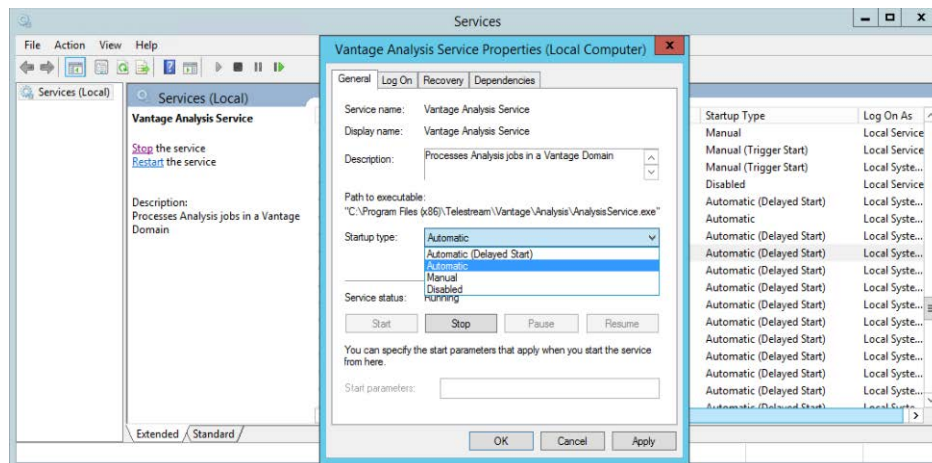
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1. Open the Services panel, right-click each Vantage service, and select Properties. On the Log On tab, set This Account for the Vantage user.



2. Restart the instance so that service settings take effect, and the services join the Vantage domain, unpack ComponentPacs, and come fully online.
3. After reboot, change the Vantage services to *Automatic* Startup Type for faster starts. This can be done manually or by using a BAT file.

**Note:** If you change the service's startup type before the first reboot of the instance after installation, the startup type reverts back to Automatic (Delayed Start).



4. Verify that all expected services are running (Online) in Vantage Management Console > Services. If not, right-click and *Restart Service*.

## Managing the Virtual Node Life Cycle

This topic explains how to start up and shut down a Vantage virtual node as part of a Vantage virtual domain.

## Spinning up a New Virtual Node

As part of the process of bringing a Vantage virtual node fully online in a Vantage domain, verify the following:

- The instance meets the Vantage media processing machine instance requirements. (See [Virtual Domain System Requirements](#) for details.)
- The services are configured on the virtual node to use the Active Directory user account that was configured with the sysadmin SQL Server Role so that the Vantage services use implicit authentication with SSPI database connectivity to join the domain. This account must be a local Windows administrator to permit writing to log files.
- Upon boot up, the Vantage services join the Vantage domain with the host name of the cloud server appearing in the Vantage Management Console Services panel.
- The virtual services come fully online and are able to perform processing.
- Upon graceful Windows OS shutdown in the cloud, the services promptly disappear from the Services panel of the Vantage Management Console.

## Shutting Down a Virtual Node

Use these procedures to ensure a smooth Vantage virtual node shutdown.

### Use a Virtual Machine Vantage Pre-Shutdown Notification

Issue a Pre-Shutdown Notification by right-clicking the Machine Metrics View in the Vantage Management Console > Status panel.

Alternatively, you can also signal the Pre-Shutdown Notification via the Vantage SDK.

This places all services for the virtual machine in *Pending Shutdown* mode as seen in VMC Services. Queued sessions will migrate to other services in the domain, and the selected services will go offline when their active sessions finish.

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**Note:** This step can be skipped if a faster shutdown is desired. Active sessions will be terminated and will restart on other services in the domain.

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### Shutting down Windows

Ensure that a graceful Windows shutdown is performed. Telestream recommends that you do not perform abrupt instance terminations—powering off a server, for example.

## Recommendations and Troubleshooting

The following tips may help you resolve issues and get the best performance from a Vantage virtual domain:

- After changing a Vantage service logon, the service is unable to restart:
  - Make sure the Windows user that the services log on as is local administrator, so that it has permission to write to log files.
  - If the service logon was changed via a script, use the Windows services console at least once to manually change the logon and then restart the service. Using the console at least once updates the local policy of the machine to allow services to log on as a specified user.
- Virtual server performance may vary depending on the virtual server being used and network traffic. Busier times of day may affect both server performance and transfer speeds.
- Place Vantage virtual domains on cloud servers located closest to your physical location, if possible, to minimize latency.
- Amazon, Azure, and other cloud storage interfaces have been added to Vantage for easily moving media in and out of storage. For high speed, high volume transfers, you can use transfer servers, such as Aspera, to move data in and out of the cloud.
- If you use cloud storage for storing media, be aware that these are object storage file systems designed for files to be read and written in their entirety, not updated in place. Therefore, Vantage workflows must localize media files to Vantage virtual domain shared storage using Move or Copy actions. Be sure input nicknames for transcoding and analysis actions reference the localized media.
- Because cloud transfer speeds may vary, transfers from the cloud may produce Vantage job failures that can be resolved by a retry. When setting up a Copy action to transfer media from the cloud, set the default number of retries to 3. This ensures transfers repeat until they complete without manual intervention.
- You can have many jobs running concurrently with the Vantage Transport service session limit set high. You can set session limits using the Setup tab for each service, in the Vantage Management Console when the service is in maintenance mode.

## Deploying a Virtual Domain in a Windows Workgroup

If necessary, you can deploy Vantage virtual domain in a Windows Workgroup without Active Directory as follows:

1. On the domain database server, use the array installation option to deploy a new instance of SQL Server Express (for larger arrays, consider SQL Server Standard).
2. Copy the ComponentPacs to a shared location accessible to all domain nodes.
3. Use the Vantage Management Console to install the ComponentPacs from the shared location.
4. On the worker node, do an array installation to install the Vantage services.

5. On the worker node, create the following Key Name:

```
HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Telestream  
\Soa\Virtualization
```

6. In the Virtualization Key Name, create a string value named *HostType* and set the value to *Transient*.

7. Verify that the following Key Name does not exist. If it exists, delete it.

```
HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Telestream  
\Soa\SSPI
```

(The SSPI Key Name may be present if ServiceVirtualizationConfig.exe was used in the past)

8. Restart the worker node.
9. On the worker node, change the Startup Type of the Vantage services from Automatic (Delayed Start) to Automatic.
10. After the services start, in the Vantage Management Console, manually assign them to the domain.

When you shut down the worker node, the Transient services automatically leave the domain. When you turn the worker node back on, the Transient services automatically rejoin the domain.

## Notes

These notes apply to operating in a Windows Workgroup environment:

- A Windows user does not need to be given the sysadmin Server Role in SQL Server.
- It is not necessary to change the Vantage services logon to a Windows user, because SSPI connectivity is not used when operating in a Windows workgroup.
- When a worker template is cloned to create a new worker node instance, the worker node does not need to join a Windows domain.
- All machine names within the Vantage domain should be resolvable by host name.
- DHCP is recommended for the ease of adding additional virtual worker nodes.
- All nodes within the Vantage domain must be synchronized by NTP.